

rence. The greatest heat of a summer's day does not occur when the sun is on the meridian, nor is the greatest heat of summer experienced in the middle latitudes of the Northern Hemisphere when the sun has reached the northern limit of its course.

If, therefore, the term "equinoctial storms" is to be preserved, and it undoubtedly will be, it may properly be employed to designate tropical storms, or hurricanes, cyclones, and typhoons, that occur in the Northern Hemisphere during the six or seven weeks that precede and follow the autumnal equinox. Many such storms may follow in rapid succession; each is an equinoctial storm. There is no one special storm to which the term "the equinoctial" should be applied.

SPECIAL CLOUD OBSERVATION.

An esteemed correspondent at Cunningham, Itasca County, Minn., Mr. David Rose, under date of December 8, 1906, states that at 11 a. m. of Friday, December 7, he "observed a clear rift of cloudless blue sky from the southern horizon thru the zenith to the northern horizon. On each side of this rift the clouds lookt like waves dashing against a rough beach." In reply to his query as to the cause and nature of this phenomenon the following letter has been sent. It would scarcely seem worth while to publish this reply were it not that so many persons are liable to make the mistake of assuming that some unknown mysterious electrical influence controls the formation of clouds, whereas the fact is cloud forms are produced by condensation of moisture under a myriad of complex conditions as to temperature, humidity, and wind, and it is these conditions that determine the nature of the cloud. If any electricity is developed in the formation of such a cloud it is a matter of very little consequence in comparison with the winds and the moisture, the barometric gradient, and the temperature gradient. Dynamic meteorology consists essentially in the study of the hydrodynamics and the thermodynamics of the atmosphere; the optical and electrical phenomena are matters of minor importance in relation to winds, storms, and weather, but they should be carefully studied by those who are expert in these matters.—EDITOR.

The weather map shows that on the morning of Friday, December 7, you were located on or near a narrow belt separating a region of cold westerly winds, which lay to the east of you, from a region of warmer southeast winds, which lay to the west of you. This latter region had disappeared by the morning of Saturday, December 8. I therefore infer that the clear, blue sky that you saw extending in a narrow band northward and southward was a region in which air was descending slowly, so that it might flow, some to the east and some to the west, toward these two regions of westerly and easterly winds, about as shown in this little sketch. In this case you would not be likely to feel any very

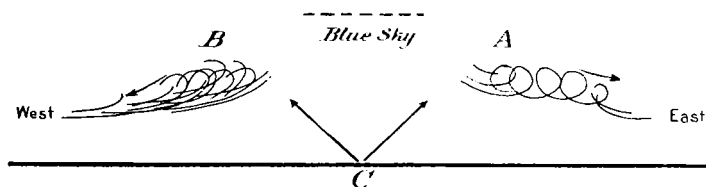


FIG. 1.—Vertical section thru clouds and clear rift.

strong winds, as the descending air would flow to the east or west before it reached the ground. However, the air rarely flows in straight lines, and these winds would undoubtedly roll over and over, forming belts of clouds at A and B, while the space between would be clear, blue sky, as seen from your point of view. The clouds that you saw are the so-called cumulus clouds, and belong to the lower atmosphere; they are not likely to have been more than a mile high at the top, but even if they were two miles, they would still be called lower clouds. This diagram, therefore, shows you that if the height of A and B above the ground was only two miles, and you were midway between them at C, then by walking a few miles east or west you would have gotten a very different view of the whole phenomenon, and persons who live five miles away would have seen nothing of it whatever. It is, therefore, not surprising that we have no records of the same phenomenon observed at other points of the country.

As the winds at A and B were fairly well balanced against each other, this clear intervening space remained nearly stationary; but eventually one must overcome the other, and, as you say that "it vanished gradually from the north", I infer that the blue sky was covered by clouds coming from that direction, where, as the map shows, we had high pressure and cold northerly winds. The whole country seems to have been covered by clouds next day.

LENTICULAR-CUMULUS CLOUDS IN COLORADO.

By J. B. WILKSEA. Dated Fruita, Mesa County, Colo., July 18, 1907.

The article on page 456 of the MONTHLY WEATHER REVIEW, for October, 1906, on lenticular-cumulus clouds has just come to my notice.

We have here an occasional cloud which may possibly be classed as lenticular-cumulus. It is of a rather dark color and in form resembles a saucer, or a number of saucers, placed one within the other, and then the pile turned upside down—the upper surface being convex, with a sharply defined outline—the lower surface not so pronouncedly convex and with a softer outline.

It usually accompanies or precedes a brisk wind and may appear singly or in numbers as high as five or six, altho two or three is ordinarily the limit.

Fig. 1 is a rough draft of them.



FIG. 1.—Lenticular-cumulus clouds.

They are always horizontal and sometimes move with considerable rapidity.

The pronounced cap shown in the third of Mr. Endicott's photographs (fig. 3, page 458, REVIEW for October, 1906), has not been observed by me.

I am convinced that those observed here are alto-cumulus clouds, seen edgewise, for the following reasons:

1. Because they have appeared in company with well-defined groups of alto-cumulus clouds, apparently at the same elevation, of the same shade, and apart from all other clouds.

2. Because these clouds are never seen near the zenith—always at a distance.

3. Because an alto-cumulus cloud, composed of one or more patches, reaching in a line toward the observer, must of necessity (when at a distance, so as to be seen edgewise), assume this form.

The clouds below the principal ones in Mr. Endicott's photographs show a suggestion of this formation, but the lower clouds are not in a direct line toward the observer, but bear away to the left. It was a puzzle to me for a long time why these clouds were not seen near the zenith.

Allow me to ask why the points at the sides of the clouds always curve slightly downward, never upward.

As to another matter, that of precipitation following a solar halo, I will say that in nearly five years my records show 16 halos, and that considering the following days 6 halos were followed by precipitation while 10 halos were not; but this is a very dry climate where we get only 8 or 10 inches of precipitation per annum.

DISTINGUISHED COOPERATIVE OBSERVERS.

The Weather Bureau has maintained many stations for thirty-seven years past, but, as is well known, its observers are employed specifically for such work, have a great variety of duties, and are often moved from one station to another, while the exact locations of the offices and instruments are also frequently changed, so that the comparability of methods and exposures is impaired.

Very different conditions pertain with our faithful voluntary cooperative observers. In these cases there are but few changes in the instruments or the locations or the men at any